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Murai, T.

Aquaculture Department, Southeast Asian Fisheries Development Center

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Effects of 2-phenoxy ethanol and MS-222 on milkfish fingerlings (*Chanos chanos*) as anaesthetic agents

T. Murai and M. R. Catacutan

Young milkfish is said to be very sensitive to handling which may result in their mass-mortality. It is also said that 50 ppm of 2-phenoxy ethanol works well for milkfish fry as an anaesthetic. In other fishes, MS-222 (meta aminobenzoic acid ethylester methanesulfonate) has been routinely used. Anaesthesia of experimental fish is important to minimize the bodily damages, and it is essential to immobilize the experimental animal for determination of individual weight.

The present experiment was conducted to find out an adequate anaesthetic and their optimum concentrations for fingerling milkfish. Treatments are as follows:

80 ppm	2-phenoxy ethanol
120 ppm	-do-
160 ppm	-do-
200 ppm	-do-
50 ppm	MS-222
100 ppm	-do-
200 ppm	-do-
no anaesthetic (control)	

Thirty fish of various sizes ranging from 0.05 to 5.04 g (mean weight, 1.06 g) were placed in a container containing 5 l of the above mentioned solution. The response time was determined by the time elapsed from the moment that fish were placed in the solution to the time that the first and all fish were immobilized. Then, water on the body surface of fish was wiped off and the total weight was determined. Thus, the fish were exposed to the air for a total of 1 minute. Then the fish were stocked in a fiberglass tank containing 30 l of filtered seawater (about 32 ppt salinity

and 29°C water temperature) with aeration. After determination of the recovery time, the fish were kept in the same tank for two days to check delayed mortality. Each treatment was repeated twice.

Results of the experiment are summarized in Table 1. None of the fish in the control group (no anaesthesia) died in two days after treatment. Unlike fry, even 200 ppm of 2-phenoxy ethanol failed to immobilize every fish in 5 minutes, but again none of the fish in all treatment groups with 2-phenoxy ethanol died in two days. On the other hand, 50 ppm of MS-222 completely immobilized fish in less than 5 minutes and all the fish recovered in about 1.5 minutes. The fish in 100 ppm of MS-222 were completely immobilized in less than 1 minute and completely recovered in little over 1 minute. Whereas, 200 ppm of MS-222 immobilized all the fish in about 20 seconds, but more than 50% failed to recover and died. Later, about 10% died. In all treatments, the results of duplication agreed fairly well and there was no clear correlation between the response time or recovery time and the size of fish.

Thus, fingerling milkfish may not be so sensitive to handling and anaesthesia might not be necessary for their handling. However, when fish must be immobilized for a certain purpose, such as determination of individual weight, MS-222 can be an adequate anaesthetic for milkfish fingerling and the optimum concentration might be between 100 and 200 ppm.

Table 1. Effects of phenoxy ethanol and MS-222 on milkfish fingerlings[1] (*Chanos chanos*) as anaesthetic agent.

Treatment (ppm)	Response time (sec)				Recovery time (sec)				Mortality (%)			
	First fish		All fish		First fish		All fish		After handling		After 2 days	
	Lot 1	Lot 2	Lot 1	Lot 2	Lot 1	Lot 2	Lot 1	Lot 2	Lot 1	Lot 2	Lot 1	Lot 2
PE[2] – 80	1200	1200	–	–	–	–	–	–	0	0	0	0
PE –120	1200	1200	–	–	–	–	–	–	0	0	0	0
PE –160	30	47	600	600	–	–	0	0	0	0	0	0
PE –200	52	65	300	300	–	–	33	43	0	0	0	0
MS[3]–50	40	25	274	263	7	10	90	85	0	0	0	0
MS –100	13	13	48	53	5	9	72	78	0	0	0	0
MS –200	6	10	21	23	45	30	–	–	67	47	11	7
control (none)	–	–	–	–	–	–	–	–	0	0	0	0

1 Average weight of 1.06 ± 1.06 (S.D.) ranging from 0.05 to 5.04 g (30 fish for each lot).

2 2-phenoxy ethanol

3 meta aminobenzoic acid ethylester methanesulfonate